

## ABSTRACT

An apparatus and methods for acoustically analyzing a fluid sample and determining one or more properties of the sample are disclosed by the present invention. The apparatus comprises a chamber, a transmitter positioned within the chamber for transmitting an acoustic signal through the fluid, a reflector movably positioned within the fluid inside the chamber for reflecting the acoustic signal, and a receiver positioned within the chamber for detecting reflections of the acoustic signal. The methods employ the use of a transmitter, a reflector movably positioned within the fluid inside the chamber, and a receiver to characterize the fluid sample based on one or more of its acoustic properties.